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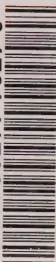
Government  
Publications



# How to plan metric conversion

## 2 — The Planning Phase

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1	0003	050630
INVENT. TIMBER & WAREHOUSE 21 UNITS DA INC. 1 TAKE CONSTRUCTION		
DATA	0178	0180

5	0003	050630
SUPPLY 25 SUPPLY 1234567 METRIC EQUIPMENT		
0278	0279	0180

1	0002	050630
SECTION ON CHANGES TO BE MADE 1. CONVERT MAINTENANCE EQUIPMENT		
0075	0177	0180

6	0003	050630
MAINTENANCE EQUIPMENT USING 21 UNITS		
0278	0279	0180

7	0003	050630
METRIC CONVERSION COMPLETED		
0278	0279	0180

18	0003	050630
OPERATE EQUIPMENT 25 UNITS 21 UNITS		
0277	0278	0180

19	0004	050630
EQUIPMENT 25 UNITS 21 UNITS 25 UNITS 21 UNITS 25 UNITS 21 UNITS		
0277	0278	0180

1	0003	050630
MATERIALS & SUPPLIES AVAILABLE TO METRIC SPECIFICATION		
DATA		

18	0003	050630
PROCURE & MAINTENANCE EQUIPMENT		
0075	0178	0180

19	0003	050630
PROCURE & MAINTENANCE EQUIPMENT		
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1	0003	050630
PROCURE METRIC CONSTRUCTION MATERIALS & SUPPLIES		
0075	0177	0180

17	0002	050630
PROCURE METRIC CONSTRUCTION MATERIALS & SUPPLIES		
0075	0177	0180

NETWORK DIAGRAM LEGEND LEGENDE DU RESEAU DES ACTIVITES			
ACTIVITY NO./N° DE L'ACTIVITE		RESPONSIBILITY NO. N° DE RESPONSABILITE	
ESTIMATED DURATION (MONTHS)	ESTIMATION DE LA DUREE DE L'ACTIVITE (EN MOIS)		
MONTH MOIS	YEAR ANNEE	11	11111

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P. C. Boire, Executive Director

*ORGANIZED COMMON SENSE* or not, my proposal to use network planning as the basic framework for metric conversion sector plans did not spring forth fully developed nor gain immediate and universal acceptance. The dedicated efforts of many people have contributed directly or indirectly to the eventual widespread use and perfection of the method and are gratefully acknowledged.

Many have contributed by enthusiastic support, others by detailed criticism in a devil's advocate role. The list of all sector and steering committee members and Metric Commission Canada staff is too long to include here by individual name. Those who are listed below are included in chronological order of their contribution.

<b>Frank Joyce</b>	— Department of Industry, Trade and Commerce
<b>Brian Ferguson</b>	— Department of Industry, Trade and Commerce
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<b>Ken Gordon</b>	— Metric Commission Canada

**Paul C. Boire**  
Executive Director  
Metric Commission Canada

# How to plan metric conversion

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# 2 Foreword



The Metric Commission Order represents a consensus of the Canadian Government that plans for metric conversion must be developed in consultation and cooperation with all interested parties. This order-in-council further states that any such plans for metric conversion must be phased and coordinated so that the benefits are achieved at minimal costs and to the best advantage of Canada as a whole. The Metric Commission Order also empowers the Commission to furnish, publish and disseminate information concerning conversion to the metric system.

Metric Commission Canada, established by this order-in-council, met for the first time on January 19th, 1972. In order to investigate what needed to be done, and to establish an overall time frame within which it should be done, the Chairman, S.M. Gossage, proposed at that meeting that a letter-questionnaire, which he had drafted, be mailed to all the main trade associations and private interest groups operating at the national level in Canada. The private sector response to this letter-questionnaire was the basis for the four phase program of guideline dates for metric conversion.

At the same time, as Executive Director, I proposed the main outlines of a staff organization designed to interact with the representatives of the national associations and other interested parties. The underlying principle in the organization chart which I had drawn up was a matrix type structure with one and subsequently two directorates or teams of people directly serving the private sector thinkers and doers. These volunteers are ultimately responsible for coordinating the implementation of metric conversion in Canada. To help capture the thinking of the private-sector planners and to express it in a standard visible manner, a research and planning directorate or team was envisaged. To help generate public awareness of the change-over and the reasons for it, as well as to help publicize individual sector plans and the key events leading to their implementation, an information directorate or publicity team was included. To ensure that each of these four directorates, acting as a matrix-management team in support of the private industry sector committees, could concentrate on its own area of expertise, a fifth directorate called intergovernmental coordination, would supply administrative and financial services as well

as overall liaison with provincial and federal government departments. The letter-questionnaire and the proposed staff organization were discussed by the twelve commissioners, assembled for the first time, and approved by unanimous agreement.

Once the letter-questionnaire had been mailed out to about one hundred national associations, the question of how to go about the task of planning had to be addressed. The need to complete projects under the dual constraints of limited resources and specified schedules, led to one conclusion. The project management approach that combined the principles of management by objective and management by exception, and that was known by the acronyms CPM and PERT as network planning, seemed to be best suited to the purpose. While Metric Commission Canada acquired the staff resources necessary to help apply the planning methodology envisaged, the Management Consulting Division of the Professional and Administrative Services Branch of the Department of Industry Trade and Commerce, and subsequently Canadian Pacific Research, helped to develop the planning methodology.

When considering project management, one of the things that comes to mind is a systematic approach that combines the features of objectivity, repeatability and communication with others. Each metric conversion sector plan is considered to be a project consisting of a number of interrelated activities which require the expenditure of time and money, to accomplish agreed objectives.

In each sector committee the process of reaching consensus on objectives required definitions that are precise and fully understandable to knowledgeable persons in the industry or other type of sector. The monitoring of implementation requires activity descriptions clear enough that observations can accurately reflect what is going on in the real world. Accurate definitions of plan and activity objectives allows the measurement of progress (whether it is in the conversion of measurement units, standards, legislation or production processes) to be quantified.

The quantification of agreed objectives proceeds readily once a consensus is reached among committee members on the criteria to be used to assign a given percent completion to a defined objective or sub-objective and the related description of work involved. A major aim in defining activity objectives and the work involved, therefore, is the elimination of the committee members' personal biases, preconceptions and convictions, which could distort the event being observed or reported upon. This process of reaching consensus on criteria for measuring progress is simply a matter of assigning numbers to progress observations in a way that is meaningful and useful to the committee members.

Additional requirements of the metric conversion planning method utilized are that the major activity areas into which the plan is broken down must be repeatable or recognizable to other sectors and communicable to them. The metric conversion planning system must be capable of being shared with others not only in the sense of being communicated to them but also in the sense of being generally applicable by others in different sectors.

The Metric Commissioners, in their deliberations at the January 1972 meeting, concluded that metric conversion, although basically a voluntary process, could not proceed in an orderly and cost-effective manner unless it was planned. The Commissioners further concluded that, if the changeover were to be accomplished at minimal costs, the plans should be made by those who would have to implement them. The final commitment of our project management approach to metric conversion planning is to deal with the activities being planned and observed in an orderly and comprehensive manner. The metric conversion planning system that is now being implemented by over one hundred sector committees in Canada is based on the considerations described above. It is a coherent system of network planning based on Precedence Diagramming or Activity-on-Arrow planning.

The detailed planning methodology described in this manual has been developed and refined by Metric Commission Canada staff with the assistance of over 2000 knowledgeable volunteers from all sectors of the Canada economy. The sector plans which have been published by Metric Commission Canada and distributed by national associations throughout the country represent one of the most comprehensive consensus building operations ever undertaken.

If your organization has not already done so, you are invited to develop a metric conversion plan based on the work already done by your sector committee, by taking advantage of the procedures detailed in this manual. The method is infinitely adaptable to large or small organizations. Individual activities or even complete major activity areas can be eliminated, contracted, or expanded to suit your individual circumstances. To the uninitiated, or to those unaccustomed to planning, the method may at first glance look complex; those who are using it have found that, after all, it's only ORGANIZED COMMON SENSE.

**Paul C. Boire**  
*Executive Director*  
*Metric Commission Canada*

# 4

## Guide for the Preparation of Sector Plans

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The "Guide for the Preparation of Sector Plans", published by Metric Commission Canada in 1974, integrates a number of guideline and policy papers which Metric Commission Canada and its committees had previously approved, and advocates procedures for Sector Plan development, co-ordination and publication. Over 2000 volunteers in every sector of the Canadian economy have referred to this guide in the development of their metric conversion sector plans. As each Sector Committee develops its own Sector Plan, the members participate in the further development and refinement of a generalized model initially created by Metric Commission Canada. There are five main elements in a Sector Plan:

1. A **plan description** with associated appendices which describes what the sector comprises, its approach to conversion, its objectives, policy and strategy, the nature of any constraints or dependencies, and what is to be accomplished by key event dates.
2. An **activity breakdown** which identifies the main activity areas in the Sector Plan, and specific activities within each area which involves the expenditure of time and money.
3. An **activity list** and associated **activity description** sheets which explain the nature of the activities to be carried out, giving their objectives, outlining work involved, and the organization responsible for implementation. Progress measurement criteria and the nature of relevant interdependencies are also described, and are essential to the effective monitoring of implementation of the plan.
4. A **network diagram** showing the logical relationship between the various activities required to achieve conversion, their timing and duration, and the critical path which determines the overall time required to implement the plan.
5. A **bar chart** derived from the network, summarizing the time span covered by the major activity areas and identifying various key events in the conversion process.

As shown in the accompanying histogram, most of the sector committees had completed the **Investigation**, or first phase of the four-phase program by the end of 1975 and had turned their attention and energy to development of their respective Sector Plans.

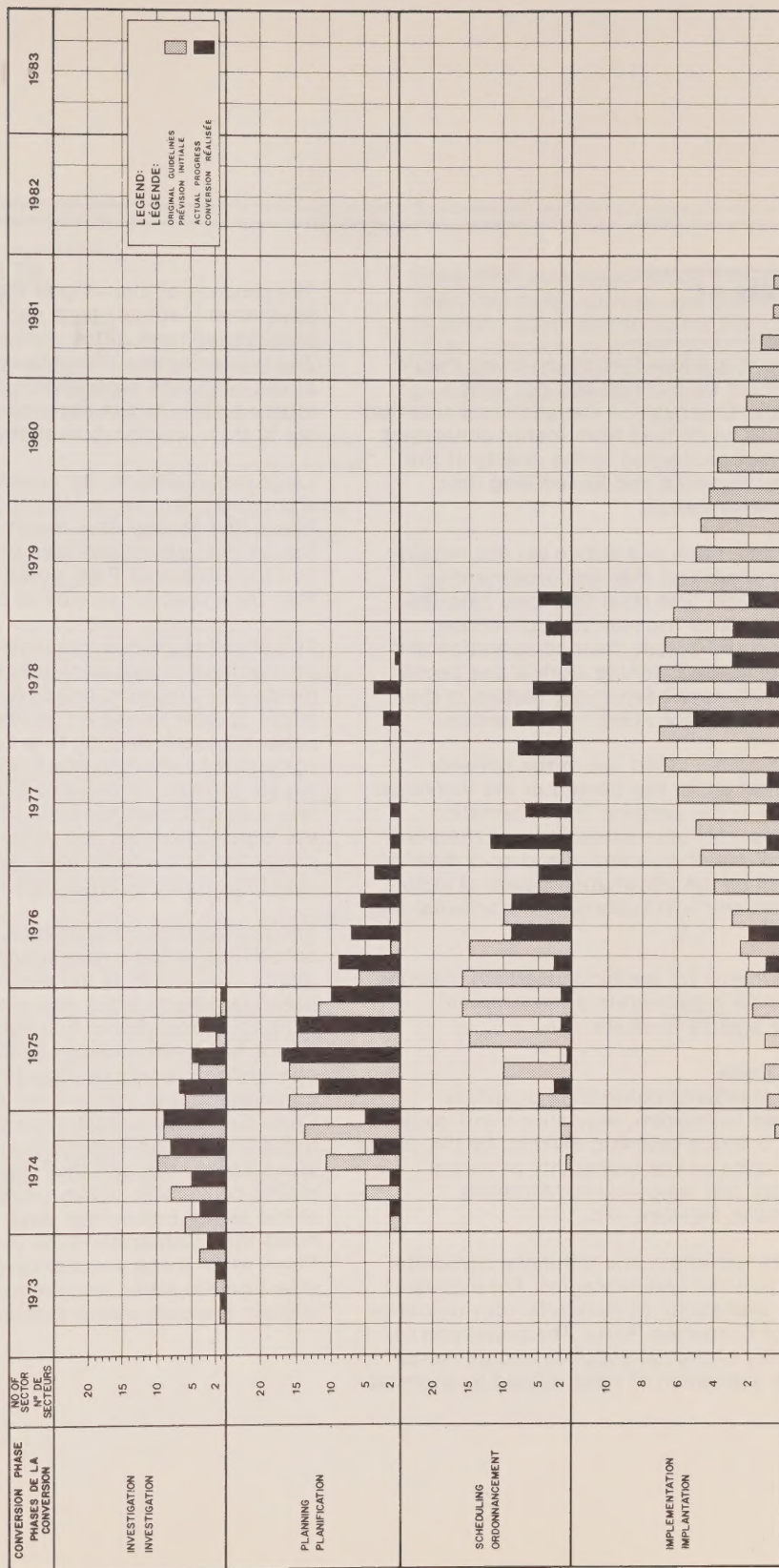
**Planning** — the second phase in the Four-Phase Program of Guideline Dates for Metric Conversion — was the key occupation of most sector committees during 1975-78. By January 1979 80 Sector Plans had been approved, published and made available for the guidance of individual firms and organizations involved in planning their own metric conversion programs.

The **Scheduling**, or third phase of the program begins with the completion of the activity breakdown and list, or when a Sector Plan is judged complete enough by members of the sector committee responsible for its preparation for review and discussion with related sectors. The Plan is then reviewed by a Commission staff committee composed of the Sector Plan Manager, the Planning Manager, the Director of Research and Planning, the Director responsible for co-ordination of the sector involved, and the Executive Director.

At this point in the Scheduling phase the draft Plan is also sent to the designated metric conversion contacts in each of the Provinces and the two Territories. Approximately one month later, after reviewing the recommendation and comments received, it is then recommended by the Sector Committee to its Steering Committee for concurrence. Recommendations from the Steering Committee are discussed in the sector after which the Plan is submitted to Metric Commission Canada for review and approval for publication.

The Scheduling phase allows time for a broad range of individuals and organizations to assess the Plan in relation to their needs. Suggestions for modifications of the Plan are invited, in order that all useful adjustments can be made before total commitment of manpower and financial resources to the **Implementation**, or final phase of the four-phase program.

THE FOUR PHASES OF METRIC CONVERSION IN CANADA      SECTOR PROGRESS REPORT AS OF MARCH 31, 1979  
 LES QUATRE PHASES DE LA CONVERSION AU SYSTÈME MÉTRIQUE AU CANADA      PROGRÈS RÉALISÉS AU 31 MARS 1979



APRIL 12, 1979  
 LE 12 AVRIL 1979

## Universality of Planning

If the objective is a low-cost changeover, metric conversion must be planned and not left to chance. Metric Commission Canada considers that the benefits to be derived from metric conversion will be in direct proportion to the quality of the **Investigation, Planning and Scheduling** that precede **Implementation**.

Since individual firms and public service organizations are the entities that are implementing metric conversion, it is clear that they have the major role to play in the national conversion process. From the outset, their co-operation and contributions to the planning work at the sector committee level have been major factors in the development of Sector Plans by consensus.

Sector planning is carried out in the national interest as well as for the benefit of the individual organizations in the sectors. The information produced by sector committees should therefore meet national public awareness and co-ordination needs as well as the information needs of individual organizations: institutional, governmental and private.

The primary inputs for metric conversion planning at the individual organization or government department/ agency level are:

- sector plans
- metric standards conversion programs
- amended legislation, regulations and codes
- metric practice guides published by the sector
- market data on the availability of metric materials and supplies, commodities, equipment, services, etc.

These inputs will affect and influence corporate objectives, policies and strategies. For instance, data on the availability of standards may influence the timing of Corporate Plans. The projection of the availability of crucial supplies and demands involves the evaluation of risks related to alternate strategies.

The process of planning at the corporate and/or government/agency level can be similar to the process followed at the sector committee level. The fundamental difference is the requirement that at the individual organization level the activities must be specified in the amount of detail appropriate to their specific operational purposes.

Large organizations, for instance, may make a distinction between a Master Plan and Divisional Plans. The Master Plan might be similar to the Sector Plan which provides the overall framework, and the Divisional Plan would be the Operational Plan for a specific service or operation.

The planning models presented in this manual can be modified to suit particular circumstances and needs. For instance, large complex organizations might choose to use a number of integrated sub-networks, each relating to a division of the corporation, whereas small organizations with a simple production process might select a much less sophisticated network. Whether large or small, the logical planning and scheduling steps presented here are completely flexible and adaptable to any size of organization.

The approach to investigation, planning and scheduling and the development of policies for metric conversion at the sector level has been based largely on input and recommendations from national associations. In addition, however, key advice has been received from the corporate metric conversion officers or co-ordinators and the corporate metric committees appointed by the Chief Executive in each organization. Many of these people and committees have also made their views known through their national association metric conversion committees with representation at the sector committee level. Others will only make their Corporate Plans in the light of Sector Plans when those are published. Each will have its effect on the other, and the net result should be a smooth low-cost metric conversion.

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## **Commitment to Sector Plans**

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The key decision makers are the individual organization executives responsible for operations and programs and accountable for producing the desired results. For them, metric conversion presents an opportunity for change which, in order to be successful, must be managed effectively and must be followed through and monitored in accordance with a well conceived plan for action. These executives will be the best source of feedback on commitment to Sector Plans and on implementation progress.

The content of a Sector Plan is developed by consensus. It is a prediction of what is likely to happen during the Four-Phase Program for Metric Conversion in that particular sector of the economy.

How closely the actual conversion process will reflect that Plan will depend on the way in which individual organizations adapt it to their own needs. For instance, some things are done more effectively at the sector level (e.g. changes in legislation); others at the company level (e.g. replacement of equipment). Both kinds of activities must be monitored at the sector committee level for meaningful coordination to take place.

The next chapter of this booklet sets out guidelines for the preparation of a Metric Conversion Plan for your own organization. These guidelines are similar to the ones followed by sector committees, who found them useful in developing a common language of planning and a common format allowing the greatest degree of communication between and amongst economic sectors.

Once your own organization's Plan has been formalized, the metric conversion officer should attempt to obtain a firm commitment from the executives of the company or organization involved that they will carry it through and monitor progress to the end of implementation.

# How to Launch Metric Conversion

Metric conversion is a project which entails the investigation, planning, scheduling and implementation of specific changes related to the introduction of SI units in your organization. This involves a series of decisions, activities and events.

First, the chief executive officer should issue a policy statement confirming the decision to "go metric", announce the appointment of a metric conversion officer (M.C.O.) and give him or her terms of reference for the job. (see Appendix 1)

Depending on the size and complexity of your organization, the chief executive may wish to appoint a metric conversion committee to help the M.C.O. in the task of developing the organization's plan. On the other hand, in small firms or businesses this may well be a one-person operation. This is covered in some detail in our booklets "How to Launch Metric Conversion in your Organization", and "A Metric Handbook for Small Business".

As mentioned previously in this booklet, the Sector Plans developed in cooperation with and recommended by Metric Commission Canada consist of five main elements: plan description, activity breakdown, activity list and descriptions, network diagram and bar chart.

## Plan Description

This consists of a narrative summary, defining and elaborating on the objectives, opportunities, policies, strategies and assumptions on which your organization's Plan is based. This portion of the Plan should map out the strategic approach which your organization will follow in investigating, planning, scheduling and implementing metric conversion.

Suggested section and paragraph headings for your plan description are included in the following check list.

## Checklist

### 1. Plan Elements

- |   |                              |                             |
|---|------------------------------|-----------------------------|
| 1.1 Does the <b>Plan Description</b> include the following: |                              |                             |
| 1.1.1 Summary   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.2 Guideline on the use of the Plan                      | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.3 Objective, Policy and Strategy                        | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.4 Constraints and Assumptions                           | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.5 Situation to be achieved by key event dates           | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.6 Comments on elements of plan:                         |                              |                             |
| Activity Breakdown  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Activity list & description                                 | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Network Diagram   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Bar Chart   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.7 Benefits & Problems in Major Activity Areas:          |                              |                             |
| 01 Measurement Units  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 02 Standards  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 03 Legislation & Regulations                                | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 04 Employer/Employee Relations                              | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 05 Design & Engineering                                     | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 06 Production Processes                                     | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 07 Equipment  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 08 Material & Supplies                                      | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 09 Business Systems   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 10 Research & Development                                   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 11 Marketing  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 12 Training   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 13 Public Awareness   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 14 Management   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 15 Quality Assurance  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.8 Relevant intersectoral dependencies                   | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 1.1.9 Relationships with USA & other countries              | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

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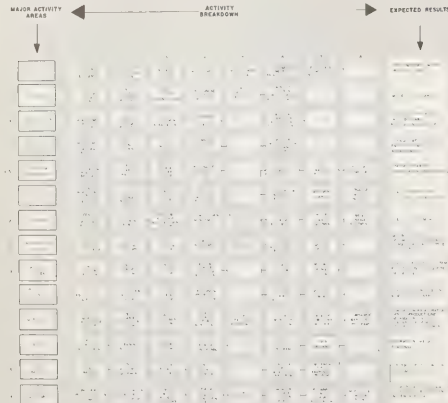
The Sector Plan for your particular industry or field of endeavour should be a useful guide in drawing up your own Plan Description. (See Appendix 2)

The activity breakdown is the first step in the planning process. It identifies in logical sequence the main activities that have to be done, so that metric conversion may be accomplished in your organization efficiently and economically.

Metric Commission Canada has identified 14 major activity areas which in most organizations are expected to be affected by metric conversion (see activity breakdown model). Some of these may not be applicable to your organization, but you should examine the activity breakdown in the Sector Plan for your sector to determine which activities will align with the sector level. Some of the activities on this plan are carried out by the sector committee; in which case you will want to monitor them to keep in touch with what's going on. Many other sector activities are logically the responsibility of your organization. A detailed description of what is expected of each of the activity areas in this plan is given in Appendix 2. The four steps in the development of an activity breakdown are:

- i) **Major Activity Areas** — Functional areas where changes involving time and money are expected to take place. Identify and list them in the left-hand column of the Sector Activity Breakdown Chart provided (page 10). They should be broad functional areas corresponding to the ones shown in the model and described in Appendix 3 in general terms.
- ii) **Expected Output** — For each major activity area you have identified as relevant to your organization, determine the desired objective and enter it in the extreme right-hand column of the Chart.
- iii) **Activity Sequences** — For each major activity area you should identify the intermediate step by step activities necessary to accomplish the expected output. These should be entered, in logical sequence, in the boxes leading horizontally from the major activity area column to the expected output column.
- iv) **Coding and Display** — You will note that, on the model, numbers have been assigned to major activity areas with a view to having a computer coding system for assessing the economy. You may find it useful to use this same coding system for computer programming and exchange of information within your own organization.

**CONCEPT** This model is a generalized attempt to identify the major activity areas which should be included in a sector plan. It is not intended to be a checklist of activities, but a guide to the planning process. The activity breakdown is the first step in the planning process. It identifies the major activities in a sector plan and provides a framework for the activity areas.



MODEL OF SECTOR ACTIVITY BREAKDOWN

Activity Area	Activity	Expected Results
Accommodation and Food Services	Accommodation and Food Services	Accommodation and Food Services
Manufacturing	Manufacturing	Manufacturing
Construction	Construction	Construction
Trade, Commerce, and Transportation	Trade, Commerce, and Transportation	Trade, Commerce, and Transportation
Health, Education, and Social Services	Health, Education, and Social Services	Health, Education, and Social Services
Government	Government	Government



To: All Directors  
All Sector Plan Managers

P.C. Boire  
Executive Director  
Metric Commission Canada

SECURITY CLASSIFICATION DE SECURITE

QUOT LE NOIRE REFERENCE

VOUS LE NOIRE REFERENCE

DATE  
October 23, 1974

# SECTOR ACTIVITY BREAKDOWN

In regard to the Guide for the Preparation of Sector Plans which was published in May 1974, three samples or models of typical activity breakdowns were provided as a guide to sector committees in reviewing the key activities which they felt should be included in their sector plan. A similar activity breakdown is also provided on page 7 of How to Launch Metric Conversion in your Organization. These activity breakdowns have been provided with a view to helping the sector committees to arrive at all of the activities which in their opinion appear to be suitable at the sector committee level and which they would therefore want to include in their activity lists and network plans. As it is highly desirable that all sector plans resemble each other as closely as possible in format so as to facilitate the exchange of information between and amongst sectors, the attached drawings are being provided to specify in a definitive manner as possible the format to be used. As shown on the attached drawing, the 'Model of Activity Breakdown' is essentially the same as Appendix 9 (2) and page 7 of How to Launch Metric Conversion, and is intended to be detailed enough to cover the most complex sector plan so that other less complicated activity breakdowns can be derived from it by deleting those activities which do not apply. A work sheet is provided on which the activities relevant to the sector can be drawn in as well as a sample of such a work sheet filled out for the Accommodation and Food Services sector.

'A Matrix of Major Activity Areas by Economic Segments' has been provided to indicate what are considered the major activity areas in any given sector of the economy. In the final analysis, of course, it is up to the sector committee to determine which activity areas are of major importance to them, and what output they expect from their plan in each area.

*P.C. Boire*  
P.C. Boire

Referring to the Sector Plan applicable to your organization, you will find that its activity breakdown provides an overall structure of activities. You will probably need to go into more detail in defining your own particular requirements. Nevertheless, the Sector Plan should be a most useful guide in drawing up this very important first step as part of your own Plan.

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### **Activity List and Descriptions**

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Once you have identified the things that need to be done on your Activity Breakdown Chart, you should write an activity description for each, expanding on the short activity title.

This provides a concise reference to the scope of the activity, its purpose or objective, and the person or segment of your organization responsible for its execution. As part of the planning discipline, this process of defining each activity ensures a better understanding of what is entailed and provides a sound basis for estimating the duration of the activity. If you cannot measure an activity or agree on criteria for measuring its percent completion, the activity needs redefining. The nature of interdependencies, both with other activities within the plan and those in other sectors, should be described.


Metric Commission Canada recommends the use of an activity description sheet format similar to that used by Sector Committees in developing Sector Plans (see example). It was designed so that you may adapt it to your own requirements, if necessary.

The activity list provides a convenient summary of the activity descriptions for ready reference. It is an index to activities by number showing pertinent information such as: activity title, responsibility code, estimated duration of the activity, precedence relationships to other activities and other remarks. It is also used as the document for transcribing information into an automated data processing system for the production of planning schedules, critical path calculations, tabular and bar chart progress reports, and the plotting of network diagrams.

During the planning, scheduling and monitoring of implementation it is quite common to refer back to the activity descriptions for clarification of some point. This, in turn, sometimes leads to modifications, which, of course, is part of the process of progressive refinement. These descriptions also provide a sound basis for establishing the logic of activity interdependencies as well as the sequencing of these activities which are shown graphically in the network diagram — the next major element of your organization's conversion plan.

# SECTOR ACTIVITY DESCRIPTION

## DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i>		Sector No. – <i>Nº du secteur</i>	
Activity title – <i>Nom de l'activité</i>		Activity No. – <i>Activité Nº</i>	Duration (months) <i>Durée (mois)</i>
Activity objective (Purposes and results expected)		Objectif de l'activité ( <i>Intentions et résultats voulus</i> )	
Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>		Responsibility No. <i>Nº de responsabilité</i>	Action by – <i>Exécutant</i>
Outline of work (List in point form)		Esquisse du travail ( <i>Énumération point par point</i> )	
Progress measurement criteria		Critères des mesures du progrès	
Nature of interdependency of this activity with other activities within sector		Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur	
Nature of interdependency of this activity with related sector(s)		Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)	Intersectorial event no. <i>Nº des événements intersectoriels</i>
Revision – <i>Révision</i>		Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No. 	Date		

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i>		Sector No. – <i>N° du secteur</i>
HIGHWAY DESIGN & OPERATIONS		5.06
Activity title – <i>Nom de l'activité</i>	Activity No. – <i>Activité N°</i>	Duration (months) <i>Durée (mois)</i>
Develop metric road sign practices	0551	21
Activity objective (Purposes and results expected) <i>Objectif de l'activité (Intentions et résultats voulus)</i>		

To produce a metric replacement for the present manual on uniform traffic control devices.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>	Responsibility No. <i>N° de responsabilité</i>	Action by – <i>Exécutant</i>
Highway operations department	050630	Planning Director
Outline of work (List in point form) <i>Esquisse du travail (Énumération point par point)</i>		

1. Consider and decide highway signing criteria, signs and signing practices to be changed.
2. Recommend metric changes in each of above areas.
3. Forward for RTAC approval, publish and issue.

Progress measurement criteria <i>Critères des mesures du progrès</i>	
Item: 1. 65%	Cumulative: 65%
2. 10%	75%
3. 25%	100%
Nature of interdependency of this activity with other activities within sector <i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>	

Preceding 0652 SS 12, 0851 SS 12

Nature of interdependency of this activity with related sector(s) <i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Information regarding form and timing of materials required is as follows: 1.3 sheet steel 2.2 plywood 3.8 paint and reflective sheeting 2.4 fasteners 4.5 aluminum sheet and extrusions 5.3 architectural and misc. structural metals 5.2 concrete	
Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i>
3 Date 77-05-22	1976-02-05
Checked by – <i>Vérifié par</i> Sector Committee	



Sector No. <i>Secteur No</i>	Sector title - Nom du secteur	HIGHWAY DESIGN & OPERATIONS		Date prepared Date rédigée	1976-02-05		Revisions - Révisions	
Number <i>Numéro</i>	Title - Nom	Activity - Activité		Responsibility* No. de responsabilité	Duration (months) Durée (mois)	No. No	Date	
		Precedes (with Lags) - Précède (avec délais)						
0500	DESIGN AND ENGINEERING							
0501	Develop metric survey and design practice	0502 SS 12, 0801 SS 12		050630	18			
0502	Prepare metric designs, contract drawings and specifications							
0503	Invite tenders and award contracts in SI units or undertake construction with own forces	0503 SS 18		050630	28			
0551	Develop metric road sign practices	0604 SS 3		050630	9			
		0652 SS 12, 0851 SS 12		050630	21			
0600	PRODUCTION PROCESSES							
0601	Identify and establish conversion priorities for maintenance documents	0602		050630	6			
0602	Decide on changes to be made and convert maintenance documents							
0603	Maintain highways using SI units	0603, 0902		050630	6			
0604	Supervise, or supervise and construct metric highways	9999		050630	6			
0651	Identify and establish conversion priorities for operations documents	9999		050630	6			
		0652		050630	6			

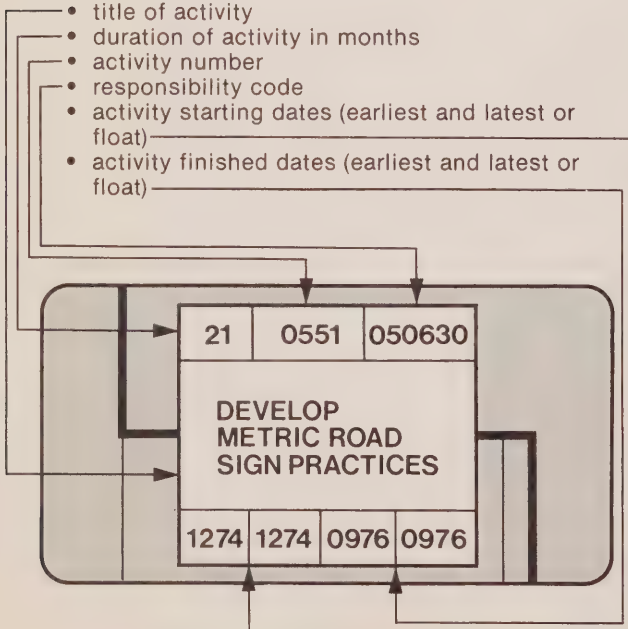
## Network Diagram

The network diagram includes all activities identified in the activity breakdown. It shows their logical sequence, timing, interdependencies and interrelationships with activities in all parts of your organization. It provides the critical path of your conversion plan, i.e. the longest path through the network, the one that determines the expected termination date for metric conversion. The network provides the information required for the development of a bar chart and the identification and selection of key events in your organization's plan.

The development of the network diagram ensures adequate visibility and provides a means for effective scheduling. It provides for management by exception by enabling you to concentrate on the critical activities and key events which the implementation of your plan is intended to achieve.

The network diagram recommended by Metric Commission Canada is referred to as a "precedence" diagram or alternatively as an "activity-on-node" network. Each activity box or node shows basic information such as:

- title of activity
- duration of activity in months
- activity number
- responsibility code
- activity starting dates (earliest and latest or float)
- activity finished dates (earliest and latest or float)



In addition, precedence networks can show the lag relationships between activities. These relationships are useful when it is necessary to show that some activities start or end prior to the completion of their preceding activity.

Activity breakdowns, activity descriptions and network diagrams will be subject to change as the metric conversion process for your organization becomes increasingly visible. None of these interrelated components of the planning process can be considered in isolation. They are all part of your plan and the development of one affects the development of the others.

## Interpreting the Network Diagram

The Network Diagram results from defining the interdependencies, precedences and constraints and the sequence of execution of activities. The lines interconnecting the activities serve to make this visible.

An activity usually starts when its preceding activity is completed. However, there are exceptions to this rule and specific lag relationships are identified in such cases. Lags are expressed as duration differentials in months between the start/finish of interconnected activities; their duration is always considered a minimum delay. There are four lag relationships which have the following meanings (See diagram below):

- **Finish-to-Start (FS) relationship**, which means that a minimum time span (referred to as a lag) must elapse from completion of activity A to the beginning of activity B. Such a lag generally corresponds to a given idle time regardless of any time constraint. If the lag is zero, the beginning of activity B corresponds to the completion of activity A. It is a NO-lag relationship.
- **Start-to-Start (SS) relationship** means that a minimum amount of work, expressed as a lag, has to be done on activity A before activity B can be started. This type of relationship is used to represent activity overlapping.

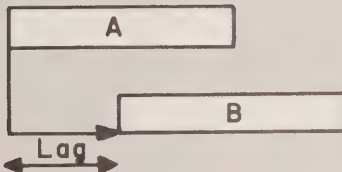
- **Finish-to-Finish (FF) relationship** means that a minimum amount of work, expressed as a lag and corresponding to the last portion of work on activity B, cannot be performed before activity A has been completed. This type of relationship is also used to represent activity overlapping.
- **Start-to-Finish (SF) relationship** means that the end of activity B cannot be reached before a minimum time has elapsed from the beginning of activity A. The lag may be subject to specific time constraints of either A or B.

In most cases a Sector Plan can be displayed with only two types of precedence relationships: "No Lag" and **Start-to-Start** relationships. The other relationships may occur infrequently.

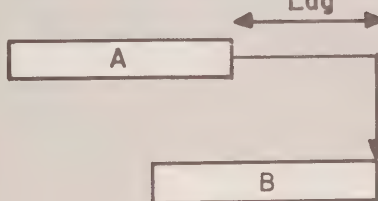
*(See also the Network Diagram and its legend for lag relationship representation).*



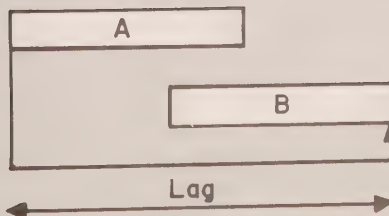
FINISH to START  
(FS)



START to START  
(SS)



FINISH to FINISH  
(FF)



START to FINISH  
(SF)

A further constraint to the start of an activity may arise from **Intersectorial Events** such as the availability of products from another sector, the adoption of standards or the enactment of legislation. Such external constraints are indicated by a double lined event box leading to an activity box. This may cross-refer to a list in an appendix to the Plan Description explaining the nature of the constraint.

The earliest start and finish of activities are obtained by calculating forward from the start date and cumulatively adding up activity durations through the network using the latest of the earliest event dates resulting from any flows into an activity, including constraints. The latest start and finish result from calculating backwards once the earliest completion date is established.

If the finish date is pre-determined the calculations are merely done in reverse order working back from the finish date.

The activity number, can be used to cross-refer to the information in the Activity List or Activity Descriptions. The explanation of codes is given in a separate list in front of the Activity List in each Sector Plan. These codes identify responsibility as being that of an individual organization, an association representing individual organizations, the Sector Committee or one of its sub-committees, Metric Commission Canada, other organizations, committees or government departments.

*(The fold-out Network Diagram for Sector 5.06, is attached to the inside back cover.)*

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### **How to find the Critical Path**

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Because not all activities are constrained in the same way, it may be possible to start some later without delaying subsequent operations. Those without such leeway or 'float' are by definition on the '**critical path**'. With most networks, the critical path is the path through all those activities which are critical in a timing sense. They have no float and are constrained insofar as their latest start date is the same as their earliest start date. In general, the critical path is the longest duration path through the network. In the Network Diagram for Sector Plans as first published the critical path is accentuated by a heavy line. This path may, and usually does shift as plans are implemented and durations change.

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## Bar Chart

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The fifth main element of your Metric Conversion Plan should be a Bar Chart (*see sample p. 22*), portraying in a convenient format the overall schedule for and an overview of your conversion program.

The bar chart is derived from the network diagram. The format recommended by Metric Commission Canada, and the one used by Sector Committees for their Sector Plans, lists all major activity areas in the left-hand column, the time frame during which metric conversion actions are planned in the middle portion, and lists by number in chronological order what you consider key events in your program in the right-hand column.

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## Interpreting the Bar Chart

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For each major activity area for which activities have been defined there is a graphic presentation of the total span or duration of the associated activities. Since some float or leeway may exist as to when activities are carried out, the bar is presented as either solid (no float), or as shaded, to indicate float or leeway in the completion dates. In the case of project/2 computer printed bar charts float is indicated by dashed lines. (*See example p. 23*)

**Key events** considered relevant have been identified on the right hand side with their date of occurrence indicated by the location of the corresponding number enclosed in a triangle or circle.

To highlight their importance the key events on the critical path are identified with a triangle. If these events do not occur as scheduled the end date will be set back.

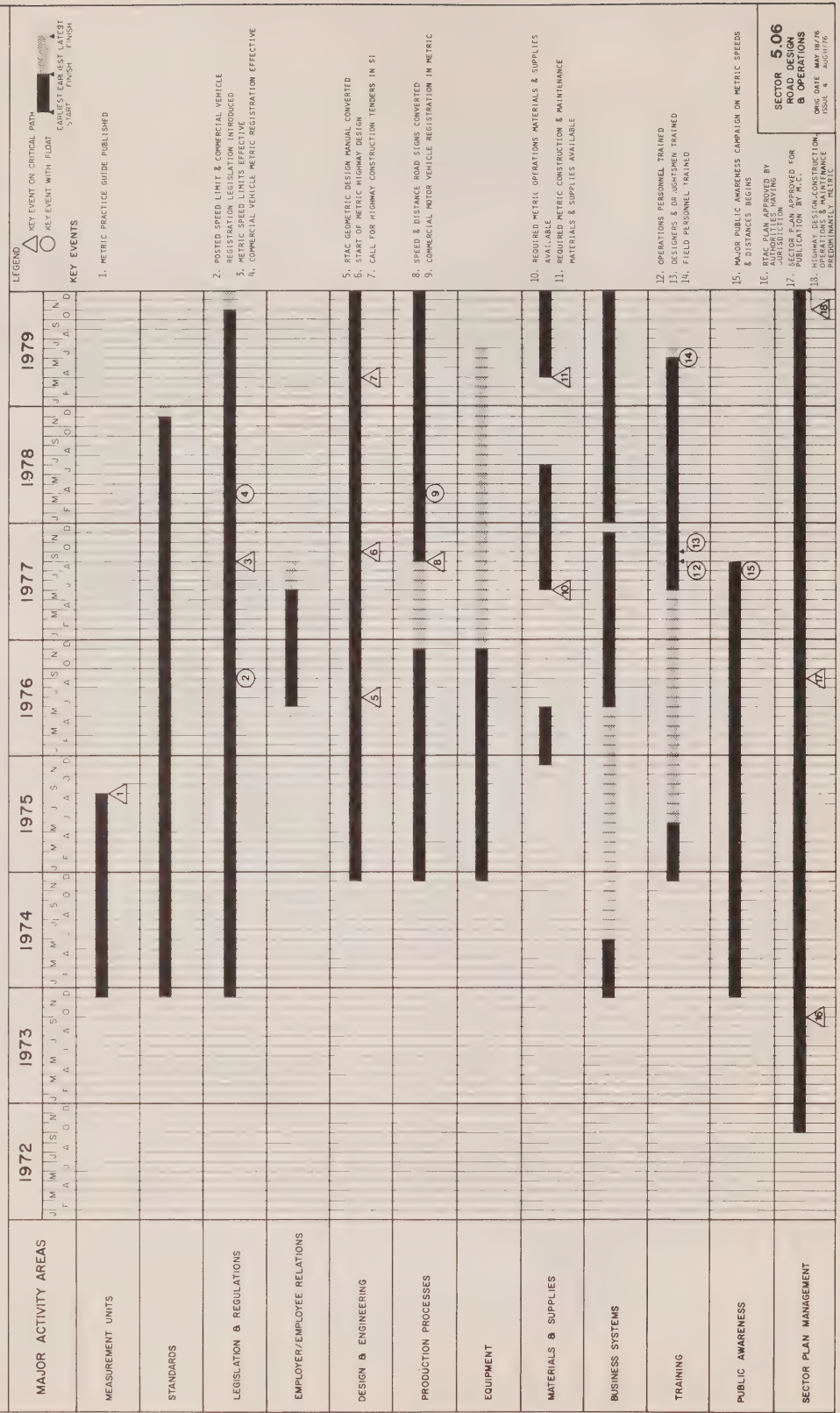
The key events which have float — i.e. those which can be completed anytime within a given time frame shown by the dotted bar — are illustrated with a circle. As long as they are completed within the limits of the dashed or dotted bar the overall end date will not be affected.

Illustrated is the Bar Chart for the Sector 5.06 (Road Design and Operations) Plan. Note there are three key events on the critical path marked on the bar for the major activity area of "design and engineering." These are: 1 July 76, RTAC Geometric Design Manual converted; 1 Oct. 77, Metric Highway Design started; 1 Apr. 79, Initial Highway Construction Tenders in SI issued. This latter key event date marks the beginning of highway construction in SI units — after which all tenders for new construction are expected to be issued in SI terms.

Such a bar chart, which by definition cannot be drawn up logically until you have completed your network diagram, is a visual overview of your organization's plan, pinpointing key event dates in each of the major activity areas on the road to metric conversion.

The project/2 computer printed bar chart by major activity area allows the current schedule (after progress has been reported) to be compared to the original planning or target schedule. Activity areas that are behind schedule can be visually identified, pointing the need for better coordination or corrective action to be taken.

BAR CHART SECTOR 5.06 ROAD DESIGN & OPERATIONS



TARGET DATA DATE 10CT72  
 RUN DATE 06SEP78 1425HRS  
 PROJECT SEC0506 ROAD DESIGN AND OPERATIONS

01 BAR CHART BY MAJOR ACTIVITY AREA

METRIC CONV. - STAND ALONE NETWORK

\*\*\*\*\* SUMMARY T A R G E T SCHEDULE \*\*\*\*\*  
 TARGET 1 COMPL 1 DEC79 DATA DATE 1AUG78 PAGE 1

NUMBER	DESCRIPTION	MODE=T/FF	SORT	CODES	67	76	77	78	79	80	81	82	83
0													
1	MEASUREMENT UNITS												
2	STANDARDS												
3	LEGISLATION & REGULATIONS												
4	EMPLOYER / EMPLOYEE RELATIONS												
5	DESIGN AND ENGINEERING												
6	PRODUCTION PROCESSES												
7	EQUIPMENT												
8	MATERIALS & SUPPLIES												
9	BUSINESS SYSTEMS												
12	TRAINING												
13	PUBLIC AWARENESS												
14	SECTOR PLAN MANAGEMENT												
99													

Bar Chart Legend

Upper Bar	•	Original Schedule
"•"	•	Original Scheduled Work
"•"	•	Total Float
Lower Bar	•	Current Schedule
"•"	•	Completed Work
"D"	•	Data Date
"X"	•	Scheduled Work
"•"	•	Total Float

MODE=T/FF  
 NUMBER DESCRIPTION

# Conclusion

"Without a plan, all our little bricks of reconstruction might just as well remain in the brickyard. Chains of consequences do not always follow the pattern we lay out, but it is just as well to start them in the right direction." *(quote from the November 1974 Monthly Letter of the Royal Bank of Canada).*

Metric Commission Canada hopes the contents of this booklet will help you get started in the right direction as you plan for metric conversion in your company, partnership, government department or other type of organization.

The planning methodology described here has proven to be a practical one at the Sector Committee level. Its adaption by individual companies and other organizations should be equally beneficial. Of course there are activities that are meaningful at the company level that can be monitored most effectively at the sector level and vice versa.

Just as no Sector Plan, even after it has been approved and published, should be considered "cast in concrete", neither should an organization's Plan be rigid and inflexible. The planning method illustrated here is almost infinitely flexible. It can be used with hand drawn plans containing ten activities, or with computer processed plans containing a hundred or several thousand activities. If your Plan is to be meaningful, it should be subject to revision and updating as often as necessary. That may be every month, every three months or twice a year, depending on the overall duration of your Plan and the feedback you get from your suppliers and your customers. By monitoring progress as you go along, and by realistically keeping your Plan updated, you can achieve a meaningful conversion that will avoid unexpected costs. Monitor your progress against the Sector Plan, to see if you fit into the national time scale for your sector.

Regardless of whether you use one or another of the modern management network planning techniques, PERT or CPM or the Precedence Diagramming (Activity on NODE) method advocated in this booklet, we like to call it OCS — **Organized Common Sense**. Most people will find that the time spent in planning this way will be recovered many times over during the implementation of metric conversion. There is an added benefit in that this planning technique can be applied to future projects your organization undertakes. Any project that has a clearly defined beginning and end and that is to be accomplished in an agreed time frame can be planned this way. To plan now is to opt for present effort over future shock.

# Terms of Reference for a Metric Conversion Officer

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**Title:**

Metric Conversion Officer

**Relationship:**

Responsible to the President

**Scope:**

Introduction of working to metric standards within the company.

**Resources:**

Revenue apportionment from departments, and capital expenditure limits as agreed.

**Key Result Areas:**

1. Preparation of an investigation report.
2. Preparation of a plan to introduce metric working and standards to the company.
3. Comparison with schedules of relevant sector plans.
4. Successful implementation of the plan.

**Specific Objectives:**

1. To work as the executive officer of the metric conversion team (committee) in investigating, planning, scheduling and implementing a course of action for the company to change from imperial to metric standards of weights and measures, consistent with:
  - (a) the requirements of the company's customers.
  - (b) the availability of raw materials and equipment.
  - (c) the program of guideline dates recommended by Metric Commission Canada.

2. To assist each department to identify its needs in relation to the change and to formulate a departmental plan based on those needs and consistent with the overall company plan.
3. To act as a single authoritative source of all information on metric matters relevant to the company, and to disseminate information to all departments when required in the program.
4. To coordinate the scheduling of all activities involved in making the change to metric standards.
5. To present a written report on progress to the President, monthly.

# Guidelines for the Preparation of your Plan Description

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This section of “**How to Plan**” was prepared with the objective of assisting planners in the preparation of their own plan description by providing suggested headings and contents.

In preparing this section of the plan document, you should keep in mind the audience to which it is directed. As your Plan is being developed for an individual organization, the recipients will be those responsible for implementing the Plan.

There are **two major objectives** in preparing the complete plan document:

- 1. To provide your individual organization with a frame-work for its own detailed conversion: investigation, planning, scheduling and implementation.
- 2. To provide Metric Commission Canada and the Steering and Sector Committees or individual organization management with a tool for coordinating implementation by monitoring progress, evaluating inter-dependencies and constraints and recommending re-scheduling where necessary. The object of this co-ordination is to help everyone concerned achieve the benefits of metric conversion at minimal costs and with the least confusion.

To assist in meeting these objectives, the following contents are suggested:

- 1. **Summary**  
A précis or summary highlighting the scope of the Plan, (who or what it covers) its major elements, any special target dates or key events, the major benefits or problems anticipated. Volume of sales and number of employees affected should be stated and benefits quantified wherever possible.
- 2. **Guide to the Use of the Sector Plan by Organizations Affected.**  
This section of the plan description is intended as a guide to members of individual organizations on how to use the sector plan document. Individual companies, organizations, departments and associations are told in this section how they can use the plan document to aid in their own detail planning and in synchronizing their plans with those of the industry as a whole.

How do you identify activities your organization is concerned with, as opposed to those handled by the sector committee? How do you extract information as to constraining legislation, or intersectorial constraints? How are you kept up to date with the scheduling changes? In effect, how can you save your organization time and effort by extracting as much as possible from this document as opposed to starting from scratch?

This section represents a mini-handbook on planning when starting from this document, but it should be tailored to the nature of the industry, the size of the individual organization, the level of its planning expertise, and the size of the conversion problem.

- 3. **Objectives, Policy and Strategy**  
These statements are intended to describe objectives, policy and strategy from the point of view of your organization as a whole, related to the whole process of metric conversion, and not just of the committee or the author relative to the planning process.

**Objectives**

A relatively broad statement of “what” your organization is trying to achieve by converting to metric should form the introduction to this portion of the plan description.

**Policy**

The policies to be followed within your organization should be clearly stated. These should act as a guide to individual decision making, be in line with the objectives and set out the broad approach to conversion. The statement of policy might include the approach to cooperation with, leading or following other sectors, the minimization of costs or rationalization of products, the approach to soft or hard conversion, the relationship to U.S. conversion, dual inventory.

### **Strategy**

This should be a general statement of “how” the broad objectives of the policy are to be implemented or carried out: whether highlighting a specific key event or taking a gradual approach to conversion: influencing legislation or standards and the timing of your organization’s conversion; emphasizing training or promotional campaigns; establishing coordinating committees; the proposed priorities and phasing of conversion.

#### **4. Constraints and Assumptions**

Constraints to conversion may arise from the unavailability of goods from other sectors, the need to obtain legislative changes prior to other actions or other impediments to change within your sector. Where these constraints lead to uncertainties as to timing because of uncontrollability, they should be so identified. In addition, there may be certain assumptions made, despite the possible uncertainties, as to actions to be taken by others or about the manner in which certain activities can be influenced or carried out. These assumptions and any activities and events based on them can be updated whenever new relevant information becomes available.

#### **5. Situation to be Achieved by Key Event Dates**

This should be a clear statement of what is expected to have happened by the key events identified. When a change-over is, in actuality, gradual, what is the state achieved by the key event? Is it total conversion, or 80% of dollar value of output or the six major firms in the sector converted, or all instruction in metric to grade eight? Virtual completion of an activity can be defined in any way that is meaningful to you, but it should be defined.

#### **6. Comments on Elements of Plan**

Comments should be included on each of the elements of the plan, not so much from the point of view of methodology in use, as to highlight the importance of certain elements, explain divergences from the norm, or give the reason for decisions to add or not include certain information. How to use the plan elements is covered in Section 2, while individual benefits and problems are covered in the next major section.

### **Activity Breakdown**

As this is the first step in the development of a network plan, it is important to give an explanation of why any major activity areas were split into more than one stream, how the conventional major activity area terminology can be interpreted to reflect the situation in the sector, why certain activity groups are absent, the approach which led to the level of detail depicted, and the reasons for the adoption of a single or multiple subsector structure for the planning.

#### **Activity Lists and Descriptions**

The activity list is a convenient summary of the activity descriptions and contains all the data necessary for computer processing of plans. These two sets are presented separately in Sector Plans, but can be discussed together since they partly duplicate each other’s data. Comments should relate to the level of detail presented in the objectives and outline of work, the approach taken to identifying intersectorial dependencies, any crucial description which merits specific attention, the existence of identifiable events which can be used for monitoring, the philosophy as to level of detail in preparing the outline of work for activities which are to be performed by individuals in organization.

#### **Network Diagram**

This is the hard core of the Plan which allows the time-saving technique of management by exception to be used. The description should highlight the network, constraints, the activities on the critical path(s), interface points (intersectorial dependencies) with other sectors, key intra-sectorial dependencies and activities where previously identified assumptions could affect conversion, why a given logic was or was not represented such as when what might appear to represent a constraint has not logically (in terms of network flows) been treated as such, why the monitoring of activities not in the sector have been included.

#### 4. **Bar Chart**

This provides a visual simplification or summary of the network plan by highlighting some key events. Where applicable, comment as to non-continuous nature of some of the solid bars, where the key start dates for implementation action are located in the various major activity areas.

#### 7. **Benefits and Problems in Major Activity Areas** ***Benefits to be Expected from Conversion***

The plan should provide motivation for its implementation and keep away from general motherhood statements. The specific benefits anticipated as a result of conversion, whether from product rationalization, improved standards, reduced inventory, easier performance comparability, trade and market opportunities, or less costly designs should be detailed in this section, and in relation to the major activity areas listed below:

- 01 Measurement Units
- 02 Standards
- 03 Legislation & Regulations
- 04 Employer/Employee Relations
- 05 Design & Engineering
- 06 Production Processes
- 07 Equipment
- 08 Material & Supplies
- 09 Business Systems
- 10 Research & Development
- 11 Marketing
- 12 Training
- 13 Public Awareness
- 14 Management

#### ***Major Difficulties or Unresolved Problems***

Activities which require special attention such as the cost impact of conversion, dual inventories, coordination with U.S.A., requirements to await external decisions, legislative problems, marketing, intersectorial constraints should be explained here. Each problem should be related to the appropriate major activity area listed above.

#### 8. **Relevant Intersectoral Dependencies**

These are events in one Plan which critically affect those in another. There should be specific elaboration of their nature, whether goods received, legislation approved, information transferred, or goods sold, in another Plan and how it affects your Plan. The comments should elaborate on what happens if critical components, standards, legislation, are not available to your organization, or how to evaluate market readiness to accept its output in metric.

#### 9. **Relationship with U.S.A. and Other Countries**

Are some conversions or decisions as to soft/hard dependent on actions in U.S. plans and intentions? What consultation method has been set up? How does it operate? Are any key event dates known?

### **Appendices**

The number of appendices will depend on whether relevant standards to be converted are to be enumerated, and whether lists of critical intersectorial products are to be provided. They should at least include a definition of the sector under which your organization is included, a list of committee members, and the names of the sector plan manager, the planning manager, and your own Metric Conversion Officer. Other required appendices which can be obtained from the Sector Plan or with the assistance of Metric Commission staff are: the table showing the 'Steering and Sector Committee Structure', a 'List of Relevant Publications and References', and a condensed 'Explanation of Sector Plan Methodology,' which you may want to incorporate in your Plan as an appendix.

# Major Activity Area Definitions

## 01 Measurement Units

### Concerns

A selection from amongst the internationally defined and accepted units for the measure of a quantity (e.g. length, mass, temperature, volume, area, pressure etc.) within SI.

### Activities

- **Identify Customary Units to be changed**
- **Review measurement-sensitive items and operations and identify yard/pound units to be replaced**, e.g. product dimensions; production processes; design and engineering including technical instructions, purchase specifications, design specifications, equipment operating and service manuals, replacement spares, documentation, engineering standards, drafting practices etc.  
The review of measurement-sensitive operations should include the input and output of the sector; example: materials and supplies coming into the sector for processing and manufacturing of sector outputs may have certain dimensions specified in a different manner from the common terminology of the sector. Similarly the output of the sector may have certain dimensions which should be considered.
- **Specify SI equivalents for customary units**
- **Select the SI measurement units** and the multiples or sub-multiples preferred for use by the sector from the options provided in Canadian Metric Practice Guide, CAN3-Z234.1-76, taking cognizance of relevant international or foreign practices. (Caution must be exercised in using international or foreign documents which may refer to earlier versions of the metric system.)
- **Identify and consult related sectors** regarding preferred measurement units.
- **Rationalize measurement units and identify measurement rules**
- **Develop Supplementary Metric Practice Guide** (see 02 Standards) and **arrange for review of Supplementary Metric Practice Guide** by a standards-writing organization.
- **Publish and distribute** the Supplementary Metric Practice Guide

Individual organization metric conversion officers (M.C.O.) and committees will find sector plan activity descriptions a useful starting point in deciding upon their own activities and how to describe them so that they can be carried out effectively and efficiently.

## 02 Standards

### Concerns

The review and amendment of existing standards and the writing of new standards. Standards may be defined as approved rules for an orderly approach to a specific activity.

### Activities

- **Identify the standards** in use. These may include standards from the following sources:
  - Canadian standards-writing organizations such as Canadian Gas Association (CGA), Canadian Government Specifications Board (CGSB), Canadian Standards Association (CSA), Underwriters Laboratories of Canada (ULC), Bureau de normalisation du Québec (BNQ) and Electrical and Electronics Manufacturers Association of Canada (EEMAC).
  - Non-Canadian standards-writing organizations (such as American Society for Testing and Materials (ASTM), American Society of Mechanical Engineers (ASME), Society of Automotive Engineers (SAE) and Institute of Electrical and Electronic Engineers (IEEE)).
  - International Organization for Standardization (ISO), International Electrotechnical Commission (IEC).
  - Industrial associations, Canadian or non-Canadian.
  - Internal or company.
  - Government departments and agencies, federal and provincial.
- **Determine the priority** for conversion of each of the standards. For those in which the sector has a primary interest, recommend the date by which conversion is required and the form of conversion i.e. "soft" or "hard" and whether to be accompanied by "rationalization". These considerations may lead to formulation of policies to guide conversion of standards; such policies may be recorded in a Supplementary Metric Practice Guide (see 01 Measurement Units).

- **Consult with the originator** to arrange for conversion either through Standards Council, or through a Canadian contact with a foreign standards-writing organization or directly in accordance with the source of standard.
- **Recommend priorities** for standards to be converted.
- **Monitor supporting activities** for conversion and publication of standards.
- **Take standards into use** in accordance with sector plan.

Individual organizations may use standards common to the sector, but may also have their own individual standards and specifications which require rewriting in SI terms. The sector plan activity descriptions may provide a guide in this respect.

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### 03 Legislation and Regulations

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#### Concerns

The amendment of laws, acts, regulations, statutes and codes, etc. which have measurement-sensitive clauses which must be amended to permit the use of SI units.

#### Activities

- **Identify measurement-sensitive legislation** by reviewing legislation at all overall levels (e.g. Federal, Provincial, Municipal) at appropriate organization levels (e.g. Departmental levels, such as Department of Public Works, Agriculture) and areas of responsibility (e.g. labour, food and drug, taxation), which are believed to affect the operations of the sector.
- **Specify legislation changes required in**  
Examples:
  - The Consumer Packaging and Labelling Act
  - Food and Drug Legislation
  - Workman's Compensation Act
  - Taxation
  - Resources Development
  - Regulations by Ministry of Transport, Canadian Radio and Television Commission, Grains Council, etc.
  - General Agreement on Tariffs and Trade (GATT) and Import Regulations, etc.

**Consult government organizations** regarding the above and other statutory and non-statutory regulations and various treaties that may have measurement-sensitive implications.

#### Recommend priority for change

Individual organization rules and by-laws may contain measurement-sensitive clauses which require rewriting in SI terms. In this respect see the activity breakdown model, and the sector activity descriptions may provide a useful starting point for the preparation of individual activity descriptions.

#### Monitor changes in Legislation and Regulations

Reference material:

- 1) See "Federal Measurement-Sensitive Clauses grouped by Sector Committee" documents provided by the Metric Commission based on work done by the I.C.M.C. (Interdepartmental Committee for Metric Conversion).
- 2) See Provincial Inventories of Measurement-Sensitive Clauses in Acts and Regulations, available from the Designated Metric Conversion Contacts in each province and territory.

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### 04 Employer/Employee Relations

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#### Concerns

The arrangements or contractual agreements between employer and employee which make reference to measurement units. They may have to be changed to permit the use of SI.

#### Activities

- **Identify measurement-sensitive agreements affected**
- **Specify changes to be made in measurement-sensitive agreements** such as
  - collective agreements
  - union contracts
  - employee benefit policies having measurement-sensitive clauses
  - production quotas
  - travel allowances
- **Consult Employee Organizations** and review Measurement-Sensitive Arrangements applicable to non-unionized personnel
- **Recommend priorities and actions**

#### See Activity Breakdown Model

Individual organizations should examine all relevant Sector Plans as a guide to preparing activity descriptions for their own Plan.

- **Monitor implementation of changed arrangements.**

NOTE: Training of all employees has been defined as a separate major activity area.

## 05 Design and Engineering

### Concerns

All measurement aspects related to the functions of Design and Engineering.

### Activities

**Identify engineering and design practices to be changed**

In particular affects:

- drawing modifications
- technical instructions (inspection, quality control)
- purchase specifications other than standards (see 02)
- design specifications other than standards (see 02)
- product operating and service manuals
- replacement spares documentation
- drafting practices (dimensioning, limits and fits)
- part coding and cataloguing
- computerized designs
- standard parts lists
- engineering calculations
- cost calculations
- data to be used in connection with invitations to tender
- **Specify changed Practices** including possible design changes on parts storage facilities because of an interim period of imperial/metric parts usage, or ways to offset this.
- **Consult Related Engineering Sectors**
- **Rationalize Product lines — Design changed Products**  
Refer to National Standard of Canada CAN3-Z234.3-77. Guide for the selection and use of preferred numbers.
- **Determine and make available rapid conversion aids** or reinforce data required for designers and draftsmen, and for what period of time.
- **Test changed Products** — determine and implement modification of environmental test equipment necessary.
- **Prepare documentation**

**See Activity Breakdown Model**

NOTE: Intersectorial or, in the case of individual organizations, interdepartmental meetings may be required to determine opportunities relating to:

- a) procurement—timing the purchase of critical metric materials/supplies
- b) marketing —assess competition approach to conversion programs
- customer demand for metric product
- phase out programs for diminishing profit products
- economics of using hybrid products as a means of managing costs of tooling changes

## 06 Production Processes

### Concerns

All aspects of the processes or production steps required to produce the end product, or service, which are measurement-sensitive or affected by introduction of designs based on SI units.

### Activities

**Identify measurement sensitive processes by Sector**

- **Specify process changes required** — by reviewing production practices such as: production manuals and procedures services to customers maintenance practices incentive practices (piece work) computerized process control stock control (stock flow, check lists, inventory records, etc.) production planning and control (operations sheets, logs, time sheets, etc.) packaging and labelling operations process practices (documentation, mixes, batches, etc.) safety practices
- **Consult related Sectors**
- **Assign priorities production related items** such as: storage and warehousing facilities (changes or temporary expansion) quality control inspection practices layouts

- Develop new production processes
- Implement changes

#### **See Activity Breakdown Model**

NOTE: In the individual organization, metric conversion provides an opportunity for improving the efficiency of the various aspects of production in conjunction with necessary changes resulting from introduction of metric units. Metric conversion officers and committees by focusing on this opportunity may achieve significant side benefits to offset any conversion costs involved.

### **07 Equipment**

#### **Concerns**

The implication of making changes in measurement-sensitive equipment, or the procurement of equipment capable of processing or producing metric products or components.

The following types of equipment should be considered:

- capital equipment such as lathes and milling machines
- modification kits for equipment
- tooling (special purpose) for machines such as press brakes and stamping presses
- measuring devices and instrumentation calibrated in other than SI units
- hand tools which are measurement-sensitive
- scales for both length and mass
- jigs and fixtures

#### **Activities**

- Identify measurement-sensitive equipment by sector
- Specify modifications required
- Consult with equipment manufacturing sectors and list equipment or modification kits needed
- Review equipment management policy and practices
- Assign priorities for change by sector
- Develop changed equipment
- Procure equipment
- Install equipment

#### **See Activity Breakdown Model**

NOTE: A policy and procedure within individual organizations may be necessary to ensure segregation of metric tooling and devices from their imperial counterparts during the conversion period.

### **08 Material and Supplies**

#### **Concerns**

All measurement-sensitive items required as input into the operating of the organizations within a sector, including production, processing, maintenance and administration. Also concerns stores, specifications, procurement, and material management.

#### **Activities**

- Identify materials and supplies to be converted to SI terms, i.e. such items as:
  - raw materials specified by length, area, volume or mass
  - purchased subassemblies and components
  - expendable tools
  - maintenance supplies
  - replacement parts
  - administration items e.g., preprinted forms, charts, etc.
  - purchase specification manuals
  - purchase contracts
  - standing purchase orders
  - long term vendor contracts
- Specify supplying sectors
- Consult supplying sectors
- Review material management practices; minimum order quantities, waste factors, inventory levels, value analysis, materials handling, cost structure
- Assign priorities by sectors
- Review inventory and supply policy and develop material management methods (Phasing in, phasing out materials and supplies and effects of dual inventories)
- Procure metric supplies

#### **See Activity Breakdown Model**

Although most of the activities in this area must be implemented at the individual organization level, there may be industry-wide practices, recommendations or agreements that require study and decision making at the sector committee level.

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## 09 Business Systems

### Concerns

All administrative systems and procedures both manual and automated, within an organization which are affected by the introduction of SI.

### Activities

- **Identify systems to be changed**
- **Specify changed systems**
- **Consult supplying sectors**
- **Assign priorities and amend systems and procedures related to:**
  - computer programs — Sectors 3.04 and/or 9.30
  - accounting records
  - process control records
  - stock control records
  - purchasing records, purchase orders, receiving slips, etc.
  - statistics and historical data (data comparability)
  - invoices and billing forms
  - cost accounting
  - tariff rates — working group on Tariffs 1.20
  - bills of lading, packing slips and shipping practices and documents
  - passenger and baggage handling
  - patient records (hospitals) — Sector 9.10
  - lab test reports
  - contract forms
  - questionnaire forms
  - procedures manuals
  - mailing records
  - management reporting
- **Implement changed systems**

### See Activity Breakdown Model

NOTE: (i) There may be a high degree of interface with activities identified in other major activity areas such as: production process controls, stock control, material management practices.

(ii) During the process of reviewing all forms used within an organization, the O & M or systems group should take the opportunity presented by the necessity of change to improve the efficiency of existing procedures

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## 10 Research & Development

### Concerns

A functional area of individual organizations, dealing with “Scientific elucidations of phenomena”, problem solving and/or product development and testing. Metric conversion involves consideration of all implications and activities resulting from the adoption of SI units (e.g. calculation methods, recording, documentation, reporting).

### Activities

- **Identify, specify, review and recommend** priorities for developing changed processes, documents, reports such as:
  - R & D agreements and other documentation
  - patent applications
  - new product specifications
  - product test methods
  - analysis and synthesis procedures
  - computer models and programs
  - formulae, reference tables, handbooks and charts
- **Consult related sectors**
- **Develop changed R & D Activities**
- **Prepare documentation**

### See Activity Breakdown Model

NOTE: Individual organization practices may indicate that some of the activities identified under Research and Development should conceivably fall within or relate to the area of Marketing Research and/or Design and Engineering. At the sector level R & D may sometimes be carried out in government laboratories or even in other countries. In such case the activities may be of a recommendatory or monitoring nature, but should nevertheless be included in the plan.

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## 11 Marketing

### Concerns

Those functions of the organization concerned with product conception, design and development, market research and marketing operations including promotion activity, sales and distribution of products.

## Activities

- **Identify markets affected by sectors**
- **Identify and list products affected** by range and variety in each sector
- **Consult customer sectors** and implement market research programs, national and foreign, to determine effects on market
- **Define priorities for marketing.** Determine which products may be soft converted only, i.e. change to metric dimensions and descriptions within existing tolerance limits  
determine hybrid products where first transition to metric will be external connections but components remain unchanged  
determine which products are to be hard converted i.e. redesigned using SI units in convenient dimensions  
rationalize product line to eliminate unnecessary sizes, review marketing and pricing policies
- **Develop marketing program.** Consult with others on purchase and inventory policies to facilitate a feasible and economic plan for transition from imperial to metric as it relates to suppliers and customers
- **Define revisions to packaging requirements.** liaise with customer to determine needs and facilitate scheduling of product change-over to metric  
develop customer service conversion program appropriate to the needs of equipment changes, parts and documentation
- **Develop promotional material**  
prepare modified or new sales literature  
develop appropriate sale promotion plan
- **Implement marketing programs**

*See Activity Breakdown Model*

## 12 Training

### Concerns

The training and development of all personnel for the purpose of conducting normal functions and operations using SI units. In the individual organization the personnel may be:

1. functioning at different levels, e.g. management, supervisory, production operations, etc. or
2. engaged in different functions, e.g. marketing, administration, accounting, procurement, systems design, manufacturing, etc.

At the sector level there may be opportunities to cut expenses by organizing training courses or seminars on an association or industry-wide basis.

## Activities

- T — training requirements of **personnel to be identified and specified by function and level.**
- R — **review training needs and priorities** of different personnel groups.
- A — ascertain availability of **necessary resources**
- I — **initiate development of appropriate training programs and schedules.**
- N — **need to know** determines **when to implement** training programs.

### *See Activity Breakdown Model*

NOTE: Training may be assisted by outside organization, e.g. Community colleges, schools, consulting organizations or teaching establishments. See position paper, "Training the Labour Force in the Use of Metric SI". October 15, 1975. This is available from Metric Commission Canada as long as the supply lasts.

## 13 Public Awareness

### Concerns

Activities designed to make various publics (audiences) aware of metric conversion plans, so as to achieve informed and motivated publics, including the general public, customers, suppliers, shareholders, directors, executives, administrators, managers, employees and related individual organizations.

### **The kinds of activities required are detailed below.**

In developing awareness campaigns for different publics, consultation with various organizations (e.g. associations, federal, provincial and municipal government departments, unions, Metric Commission Canada, etc.) and determination of various needs (covering SI units, standards, legislation, policies, plans, schedules, key events, etc.) should be looked into by the sector committee or the metric conversion committee of the individual organization as the case may be.

Perhaps a public awareness sub-committee should be formed to determine **who** needs to know **what**, **when**. Through appropriate consultation, recommendations may be made as to **how** the sector campaign should be developed (i.e. the nature and extent of P.R. promotion, media relations and other activities and the allocations of an adequate information budget).

### Public Awareness and Updating of Plans

This section should describe the campaign to be carried out under the direction of the company or sector committee to inform their member publics or audiences how they are to be kept up-to-date as metric conversion progresses. The procedures to be followed in reporting progress and updating the sector plans as a result of the monitoring process can be described here. The criteria for measuring percentage completion of activities can be described, as well as the feedback mechanisms for getting information from individuals and organizations, integrating it into useful reports and sending it back.

### Objective

Informed publics within and related to economic sector

### Activities

- I — **Identify publics** needing to be informed — other sectors, suppliers, customers, governments, labour management, general public
- N — **Needs of each specific public** must be determined — units, standards, legislation, regulations, policies, plans, schedules, key events
- F — **Formulate resource requirements** to meet specific public needs — manpower, materials, money, motivation
- O — **Organizations must be consulted**, i.e. those with needs & resources — associations, government departments, unions, metric commission
- R — **Recognize priorities** amongst publics and allocate resources accordingly
- M — **Make list of activities**, and add to **activity breakdown**  
Type **activity descriptions**  
Add awareness project activities to **network diagram**  
Add key events to **bar chart**

## 14. Sector Plan Management

### Concerns

The metric conversion coordination process at the national or Metric Commission Canada level; the steering committee level, the sector committee level and at the individual organization levels, to achieve a phased and coordinated investigation, planning, scheduling and implementation of metric conversion.

### Activities

#### 1. By Sector Committees:

- **Define objectives, policy, strategy and assumptions**  
develop and obtain consensus on sector metric conversion, objectives, policy, strategy and assumptions as part of sector plan description.
- **Request appointment of Metric Coordinators**, within individual organizations
- **Develop Activity Breakdown** for the sector plan.
- **Define structure of plan(s)**, priorities and procedures for planning in **Precedence Diagram** network format.
- **Develop Activity Description** sheets and prepare **Activity Lists**
- **Consult with other sectors, and related government organizations**
- **Consult Statistics Canada re production and price statistics**
- **Liase with foreign organizations** having similar interests and appoint liaison member with USA sector committee
- **Intrasector liaison and coordination** (between subsectors within the sector)
- **Establish sector subcommittees** and articulate issues of concern at sector level
- **Develop sector metric conversion plan description**
- **Derive schedule in bar chart form** with key events, from network diagram
- **Obtain consensus on sector plan(s)** from related sectors, governments, etc.
- **Recommend plan to steering committee for concurrence**
- **Obtain approval of Metric Commission Canada for publication**
- **Monitor implementation of sector plan activities and report sector conversion progress.**

- **Update, and upgrade sector plan document** at regular meetings of the sector committee.
- **Adjust committee plans** as necessary to take advantage of opportunities and optimize benefit/cost ratio.

## 2. By Individual Organizations

- If the size of the organization warrants it, appoint a metric conversion committee
- Appoint Metric Conversion Officer (Metric Coordinator) M.C.O. reporting to Chief Executive Officer
- Carry out investigations and define corporate objectives, policy and strategy for metric conversion
- Carry out planning and scheduling for the entire organization, by organizational component, function, product group, and/or markets using the relevant sector plan or plans as a guide. To the extent that your plans can be developed in terms of the major activity areas in the sector plans, and using the network planning methodology recommended by Metric Commission Canada, you will be able to participate most effectively with national associations, sector committees, steering committees and Metric Commission Canada in ensuring that the benefits of metric conversion are obtained at minimal costs.

## ***See Activity Breakdown Model***

**NOTE:** The quality of the sector plan is determined greatly by the participation of appropriate and adequate representation of sector organizations and associations at sector meetings. Therefore, the sector committee should ensure involvement in decision making by all sub-sectors, related associations and other organizations, including small businesses.

# Guide for the Preparation of Activity Descriptions

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The Sector Activity Description Sheets contain 18 fields, blocks or spaces for various types of information. Of these, 8 allow for the sector or committee title and number, completion date and revision dates, activity title and number.

Seven other fields on the activity descriptions require the intellectual contribution of the committee members. These are:

1. **Activity Objective** — It answers questions like:  
What is to be achieved by the activity?  
Why is it required?  
What is its purpose or what result can be expected?

While a simple activity like “obtain documents” may appear self-explanatory the objective is usually an elaboration of the title of the activity. The documents are to be obtained so that something can happen or so that a decision can be made, e.g., a design changed, a manual prepared or a decision on a legislative clause made.

Whenever possible, the definition of the objective should indicate an identifiable end product or achievement so that subsequent monitoring of progress can establish how far implementation has advanced and when completion of this conversion activity is achieved. If progress towards the objective cannot be measured in a practical way, the objective probably has not been well defined.

## 2. Organization(s) Responsible for Execution

This entry identifies which department in a company, organization, or group of organizations, is responsible for the execution of the activity. It should identify descriptively the organization or group which has the authority or mandate and the resources to perform the activity.

The organization may be the company or sector committee or one of its’ sub-committees, the individual organizations in the sector or the associations representing such organizations. The activity may also be of a monitoring nature with stimuli to and feedback from another organization outside the individual organization or the sector, such as a standards writing organization, a government department, or another sector.

## 3. Action by

This entry identifies **who**, within the organization identified above, is specifically responsible for the action. This person should be identified by title or name.

## 4. Responsibility Number

In the case of Metric Commission Canada sector plans, the responsibility number is a code number filled in by the Planning Manager of the Research and Planning Directorate of the Metric Commission. It is an aid to rapid storage and retrieval of related information. Organizations which plan to process their plans with the aid of a computer program will want to assign similar numbers.

## 5. Outline of Work Involved

To ensure that there is common understanding of what has to be done, list the work or tasks to be carried out. For ease of reading identify the tasks in point form, always beginning with an action verb.

The listing should include identifiable end results which can later be used in the monitoring process. Criteria against which percentage completion of work can be evaluated should be given. Even though these percentages are arbitrarily assigned, they will provide a useful means of measuring progress of the work involved.

The more carefully the outline of work is defined, the more confident will be the estimate of duration of the activity and the greater the relevance of the plan to the recipients. Attention to the definition of criteria against which progress can be measured will help to ensure trouble-free implementation of the plan. If you can't measure its accomplishment in identifiable steps, the activity probably isn't adequately described.

## 6. Duration

This entry calls for an estimated duration in months for completion of the activity defined. It represents the informed estimate of the committee members arrived at by consensus. It may subsequently be modified as better knowledge is obtained and as the complexity, dependencies and constraints on the tasks are known.

The duration estimate is affected by the scope of the work, the available resources in the sector and related sectors as well as by market forces, the economic situation, and the chosen policy and strategy of the sector. Where a large number of organizations are involved in implementing the activity on an individual basis, it is the time from when 10% have started (virtual start) until 90% have completed (virtual finish) the activity. Where many organizations are involved it may be difficult to determine actual starts and finishes and virtual events as defined above will usually serve the purpose well enough.

**7. Interdependencies of this activity with other activities within the sector or organization**

Describe the dependencies of this activity with other activities identified in the plan, and state the particular constraining key event and nature of the dependency, e.g., availability of specific information, delivery of specific services or goods, etc. Also, enter the number(s) of activities which this activity precedes.

**8. Interdependency of this activity with related sector(s) or organizations**

Wherever possible, identify important interface points with other sector plans, i.e., events in other sectors. Describe the dependencies of this activity on the completion of an activity or activities contained in other sector plans. State the nature of the interface, list the related sectors, and indicate the particular event, and its nature, which exercises the constraint, e.g., availability of essential equipment, supplies or material, the availability of specific amendments of legislation and regulations, the availability of specific standards, etc.

To aid you in getting started, examples of several additional activity descriptions are attached. In the case of an individual organization such as a company, a school, or a hospital, the appropriate sector plan descriptions can be used as a guide.

Your plan can be as simple or as complex as required to meet your needs, but in any case well written activity descriptions will save you time and money in the long run.

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

39

Sector title – <i>Nom du secteur</i>  AIR TRANSPORT		Sector No. – <i>Nº du secteur</i>  1.01	
Activity title – <i>Nom de l'activité</i> Prepare draft list of SI and/or international units for air operations		Activity No. – <i>Activité Nº</i>  0103	Duration (months) <i>Durée (mois)</i>  5
Activity objective (Purposes and results expected)		<i>Objectif de l'activité (Intentions et résultats voulus)</i>	

To establish a list of recommended units in flight operations for negotiation of new international agreements.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>  Sector Committee	Responsibility No. <i>Nº de responsabilité</i>  010100	Action by – <i>Exécutant</i>  Chairman, Units Subcommittee
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>


- 1) Review equivalent SI units with respect to their particular application and impact on safety aspects of flight operations.
- 2) Determine the need, if any, to recommend interim non-SI units.
- 3) Prepare list of SI and/or interim units.
- 4) Obtain industry consensus.

Progress measurement criteria		<i>Critères des mesures du progrès</i>			
Criteria:	1) 20%	2) 40%	3) 10%	4) 30%	
Aggregate:	20%	60%	70%	100%	

Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
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## List of SI equivalent units available

Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>Nº des événements intersectoriels</i>
Consult Transport Canada		

Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i> 1978-12-15	Checked by – <i>Vérifié par</i> H.D.
No.  <i>Nº</i>	Planning Sub-Committee	B.F.D.

# SECTOR ACTIVITY DESCRIPTION

## DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i>	Sector No. – <i>Nº du secteur</i>
Fire Fighting Equipment and Operation	2.27

Activity title – <i>Nom de l'activité</i>	Activity No. – <i>Activité Nº</i>	Duration (months) <i>Durée (mois)</i>
Recommend appropriate Standards Conversion Action	0206	15

Activity objective (Purposes and results expected) *Objectif de l'activité (Intentions et résultats voulus)*

Recommend appropriate Standards Conversion Action

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>	Responsibility No. <i>Nº de responsabilité</i>	Action by – <i>Exécutant</i>
Sector Committee	022700	Chairman, Standards Subcommittee

Outline of work (List in point form) *Esquisse du travail (Énumération point par point)*


- 1) Present Recommended Standards Conversion Changes
- 2) Present Schedule recommended for Standards Conversion Changes
- 3) Finalize and submit

Progress measurement criteria *Critères des mesures du progrès*

Criteria:	1.	35%	2.	35%	3.	30%
Aggregate:		35%		70%		100%

Nature of interdependency of this activity with other activities within sector *Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur*

Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>Nº des événements intersectoriels</i>
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Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No.  1	Date 79-05-02	79-01-22
		Sector Committee

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

41

Sector title – <i>Nom du secteur</i> SOFT DRINKS		Sector No. – <i>N° du secteur</i> 63.03	
Activity title – <i>Nom de l'activité</i> Obtain and Implement Revised Legislation		Activity No. – <i>Activité N°</i> 0303	Duration (months) <i>Durée (mois)</i> 60
Activity objective (Purposes and results expected)		<i>Objectif de l'activité (Intentions et résultats voulus)</i>	


To avoid conflict with the sector plan.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i> Individual Companies	Responsibility No. <i>N° de responsabilité</i> 630330	Action by – <i>Exécutant</i> C.S.D.A. and Individual Organization
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>

1. Monitor the progress of revisions to regulations.
2. Receive revised regulations and forward to industry.
3. Industry to comply with revised regulations.

Progress measurement criteria	Aggregate	<i>Critères des mesures du progrès</i>
Monitor 40%	40%	
Receive 20%	60%	Can run concurrently for different legislations
Comply 40%	100%	
Progress to be determined by C.S.D.A. by contacting various organizations and estimating from the total number of legislations.		

Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
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Nature of interdependency of this activity with related sector(s)		<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i>		Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No.  <i>N°</i>	Date		
4	1979-05-01	1978-12-11	Planning Sub-Committee

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE


Sector title – <i>Nom du secteur</i>  MINES		Sector No. – <i>N° du secteur</i>  4.01	
Activity title – <i>Nom de l'activité</i>  Identify Measurement Sensitive Areas in Agreements		Activity No. – <i>Activité N°</i>  0401	Duration (months) <i>Durée (mois)</i>  3
Activity objective (Purposes and results expected)		<i>Objectif de l'activité (Intentions et résultats voulus)</i>	

To be prepared to operate internally in metric when deemed advisable by individual companies.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>  Individual companies	Responsibility No. <i>N° de responsabilité</i>  040130	Action by – <i>Exécutant</i>  M.C.O.
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>

- Review labour agreements to identify and list measurement sensitive clauses.
- Liaise with unions and/or employee representatives, and determine area requiring changes.

Progress measurement criteria <i>Critères des mesures du progrès</i>  25% Complete when all measurement sensitive clauses have been reviewed. 75% Complete when common approach with unions/employee representatives decided 100% Complete when areas of required change have been agreed.  Progress to be determined by questionnaire survey of Association Membership.	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
Nature of interdependency of this activity with other activities within sector	

Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i>  No.  <i>N°</i>	Date  1977-06-07	Checked by – <i>Vérifié par</i>

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

43

Sector title – <i>Nom du secteur</i>	Sector No. – <i>N° du secteur</i>
Structural & Architectural Metals	5.03

Activity title – <i>Nom de l'activité</i>	Activity No. – <i>Activité N°</i>	Duration (months) <i>Durée (mois)</i>
Provide design aids	0502	80
Activity objective (Purposes and results expected) <i>Objectif de l'activité (Intentions et résultats voulus)</i>		

Produce revised handbooks, tables, charts, computer programs and other design aids to enable designers to work efficiently in SI units.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>	Responsibility No. <i>N° de responsabilité</i>	Action by – <i>Exécutant</i>
Individual Companies	050330	Association staff; Company Staff

Outline of work (List in point form)	<i>Esquisse du travail (Énumération point par point)</i>
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1. Establish responsibility for identifying design aids to be changed, and for changing them.
2. Identify design aids to be changed.
3. Establish funding, procedures, and timetables for producing revised design aids.
4. Produce revised design aids.
5. Provide designers with revised design aids.

Progress measurement criteria <i>Critères des mesures du progrès</i>
Individual associations will establish data collection & monitoring criteria appropriate to their particular industry segment. Report to sector monitoring committee on form provided for consolidation and appropriate action relative to sector plan.
CRITERIA: 1) 10% 2) 20% 3) 10% 4) 50% 5) 10%
AGGREGATE: 10% 30% 40% 90% 100%

Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
--	--

Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No. 2	Date 1979-05-10	1977-08-15
		Sector Committee

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i> <b>Dry Cleaners and Launderers</b>		Sector No. – <i>N° du secteur</i> <b>09.71</b>	
Activity title – <i>Nom de l'activité</i> <b>IMPLEMENT PROCESS CHANGES</b>		Activity No. – <i>Activité N°</i> <b>0604</b>	Duration (months) <i>Durée (mois)</i> <b>4</b>
Activity objective (Purposes and results expected)		<i>Objectif de l'activité (Intentions et résultats voulus)</i>	


To change processes due to the requirement of metric conversion.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i> <b>Operator</b>	Responsibility No. <i>N° de responsabilité</i> <b>097130</b>	Action by – <i>Exécutant</i> <b>Operator</b>
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>

- 1) Adjust any process needed to be changed.
- 2) Change measurement-sensitive charts, gauges, etc. or use conversion charts to record metric data.

Progress measurement criteria		<i>Critères des mesures du progrès</i>	<u>Aggregate</u>
Adjust process	60%		60%
Change charts, etc.	40%		100%
100% complete when all processes are soft or hard converted.			

Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
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Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i>		Date prepared – <i>Date rédigée</i>
No. 	Date	1979-05-11
		Checked by – <i>Véifié par</i>

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

45

Sector title – <i>Nom du secteur</i> <b>CLOTHING</b>		Sector No. – <i>Nº du secteur</i> <b>7.20</b>	
Activity title – <i>Nom de l'activité</i> <b>IDENTIFY EQUIPMENT TO BE CHANGED</b>		Activity No. – <i>Activité Nº</i> <b>0701</b>	Duration (months) <i>Durée (mois)</i> <b>4</b>

Activity objective (Purposes and results expected)

*Objectif de l'activité (Intentions et résultats voulus)*

To list the measurement-sensitive equipment

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>  <b>Company</b>	Responsibility No. <i>Nº de responsabilité</i>  <b>072030</b>	Action by – <i>Exécutant</i>  <b>M.C.O.</b>
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Outline of work (List in point form)

*Esquisse du travail (Énumération point par point)*

Inventory all equipment and determine what equipment will have to be replaced or modified, such as: grading machine, marking and spreading equipment, cutting and slitting machines, ticketing machines, measuring tools, steam boiler, fusing machines, sewing machines, compressors, gauges, seamers, scales, counters, crafting equipment, cutting table rules, stamping machines, patterns, dies, templates, numerical control tabs, measuring rules, boiler room pressure, fabric rerolling machine, carpentry shop, tape measures.

Progress measurement criteria

*Critères des mesures du progrès*

Questionnaire on conversion progress to be sent to all Metric Conversion Officers. When listing is prepared, this activity is 100% completed.


Nature of interdependency of this activity with other activities within sector

*Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur*

Nature of interdependency of this activity with related sector(s)

*Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)*

Intersectorial event no.  
*Nº des événements intersectoriels*

Revision – <i>Révision</i>		Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No. 	Date	<b>1977-09-20</b>	<b>Sector Committee</b>

# SECTOR ACTIVITY DESCRIPTION

## DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i> Paper & Allied Industries, Printing & Publishing		Sector No. – <i>N° du secteur</i> 8.45
Activity title – <i>Nom de l'activité</i> Change raw material specifications to metric	Activity No. – <i>Activité N°</i> 0801	Duration (months) <i>Durée (mois)</i> 35
Activity objective (Purposes and results expected)		<i>Objectif de l'activité (Intentions et résultats voulus)</i>


Raw material specifications will be expressed in units that are SI approved.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i> All Associations in the Sector	Responsibility No. <i>N° de responsabilité</i> 084530	Action by – <i>Exécutant</i> Each Association
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>

Each Association to undertake the following tasks:

- Identify raw materials to be converted
- List proposed metric equivalents
- Obtain consensus with Suppliers and Sector
- Implement changes.

Progress measurement criteria Percent Complete 20 - Raw Materials identified 40 - Metric equivalents listed 80 - Agreement reached on Metric Specifications 100 - Metric Specifications prepared and issued	<i>Critères des mesures du progrès</i>
Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>

Nature of interdependency of this activity with related sector(s) Common Terminology and units and Precision of Measurement for specification will require consultation with Sectors: 2.24, 2.32, 2.34, 3.01, 3.04, 3.08, 3.09, 9.30, 10.02, 10.03.	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i> No.  1 Date 1979-03-01	Date prepared – <i>Date rédigée</i> 1976-03-09	Checked by – <i>Vérifié par</i> G.E.

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

47

Sector title – <i>Nom du secteur</i> Post-Secondary Non-University Education		Sector No. – <i>N° du secteur</i> 10.03	
Activity title – <i>Nom de l'activité</i> Specify Changes to Administrative Systems, Materials and Supplies		Activity No. – <i>Activité N°</i> 0904	Duration (months) <i>Durée (mois)</i> 36
Activity objective (Purposes and results expected) <i>Objectif de l'activité (Intentions et résultats voulus)</i>			

To specify changes required in administrative systems to conform to SI practice.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i> MCC (Metric Conversion Coordinator)	Responsibility No. <i>N° de responsabilité</i> 400200	Action by – <i>Exécutant</i> MCC
Outline of work (List in point form) <i>Esquisse du travail (Énumération point par point)</i>		

- 1) Prepare an inventory of all measurement-sensitive materials and supplies.
- 2) Correct relevant specifications to reflect SI implementation.
- 3) Issue as alternate specifications with full implementation dates set out.
- 4) Specify changes necessary in administrative systems consistent with SI practice.

Progress measurement criteria <i>Critères des mesures du progrès</i>
Criteria: 1) 20% 2) 20% 3) 20% 4) 40%
Aggregate: 20% 40% 60% 100%
Progress data to be collected by questionnaires.

Nature of interdependency of this activity with other activities within sector <i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
Precedes Activity 0905 Follows Activities 0903, 1209, 0201 This activity can begin 1 month after the key personnel have been trained. The identification of institutional policies, standards & regulations have just to be completed.

Nature of interdependency of this activity with related sector(s) <i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>
Revision – <i>Révision</i> No. 1 Date 1979-03-05	Date prepared – <i>Date rédigée</i> Checked by – <i>Vérifié par</i> Sector Committee

SECTOR ACTIVITY DESCRIPTION  
DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – <i>Nom du secteur</i> ELECTRICAL MANUFACTURERS		Sector No. – <i>Nº du secteur</i> 3.01	
Activity title – <i>Nom de l'activité</i> DEVELOP CHANGES IN R AND D METHODS & ACTIVITIES		Activity No. – <i>Activité Nº</i> 1003	Duration (months) <i>Durée (mois)</i> 24
Activity objective (Purposes and results expected)		Objectif de l'activité ( <i>Intentions et résultats voulus</i> )	

USE OF SI LANGUAGE

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>  INDUSTRY IN GENERAL	Responsibility No. <i>Nº de responsabilité</i>  030130	Action by – <i>Exécutant</i>  M.C.O.
Outline of work (List in point form)		<i>Esquisse du travail (Énumération point par point)</i>


Implement use of revised instruments and procedures. Assess and evaluate latest technology to be considered for inclusion in any design revisions.

Progress measurement criteria <i>Critères des mesures du progrès</i>  4% of R and D converted to SI at end of 6 months 13% of R and D converted to SI at end of 12 months 80% of R and D converted to SI at end of 18 months 90% of R and D converted to SI at end of 24 months
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Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
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1002

Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>Nº des événements intersectoriels</i>
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Revision – <i>Révision</i>		Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No.  1	Date 1978-05-10	1976-06-05	

**SECTOR ACTIVITY DESCRIPTION  
DESCRIPTION DE L'ACTIVITÉ SECTORIELLE**

**49**

Sector title – <i>Nom du secteur</i>	Sector No. – <i>N° du secteur</i>
POULTRY	61.03

Activity title – <i>Nom de l'activité</i>	Activity No. – <i>Activité N°</i>	Duration (months) <i>Durée (mois)</i>
Develop Metric Marketing Practices	1103	12

Activity objective (Purposes and results expected)	<i>Objectif de l'activité (Intentions et résultats voulus)</i>
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To prepare a marketing program ready for implementation.

Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>	Responsibility No. <i>N° de responsabilité</i>	Action by – <i>Exécutant</i>
Individual Organizations	610330	M.C.O.

Outline of work (List in point form)	<i>Esquisse du travail (Énumération point par point)</i>
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1. Agree upon development of Metric Marketing Program. (schedule priorities)
2. Obtain consensus from Sector.
3. Develop price lists, trade literature, promotion, etc.

Progress measurement criteria	<i>Critères des mesures du progrès</i>
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Activity is 25% complete when a marketing program has been developed.  
 Activity is 50% complete when a sector consensus on priorities has been obtained.  
 Activity is 100% complete when trade literature, price lists, promotions are in SI units.

Nature of interdependency of this activity with other activities within sector	<i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>
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Nature of interdependency of this activity with related sector(s)	<i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>N° des événements intersectoriels</i>

Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i>	Checked by – <i>Vérifié par</i>
No.  1	Date 1978-10-16	1976-07-14
		Sector Committee

SECTOR ACTIVITY DESCRIPTION  
DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – Nom du secteur MEAT PACKERS		Sector No. – N° du secteur 62.03	
Activity title – Nom de l'activité Develop Training Programs		Activity No. – Activité N° 1202	Duration (months) Durée (mois) 20
Activity objective (Purposes and results expected)  To work out training approaches, programs and schedules for (a) individual departments or job functions and (b) all employees in general preparation for metric conversion		Objectif de l'activité (Intentions et résultats voulus)	
Organization(s) responsible for execution Organisme(s) chargé(s) de l'exécution (a) Sector Sub-Sector Committee (b) Individual companies		Responsibility No. N° de responsabilité 62 03 30	Action by – Exécutant Company M.C.O.
Outline of work (List in point form)  1. Identify all training materials available and select appropriate material for employee training 2. Education - Develop specific programs to fit the requirements for specific jobs/personnel identified in Activity 1201 3. Test the materials in test sessions of the program 4. Revise Training Manuals and programs.		Esquisse du travail (Énumération point par point)	
Progress measurement criteria  1. 20% 2. 50% 3. 20% 4. 10%		Critères des mesures du progrès  Aggregate 20% 70% 90% 100%  - Initially Sector Committee members to provide reports - Later on questionnaire survey will be used to determine industry progress	
Nature of interdependency of this activity with other activities within sector		Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur	
Nature of interdependency of this activity with related sector(s)		Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)	Intersectorial event no. N° des événements intersectoriels
Revision – Révision No. 2		Date 1978-12-12	Date prepared – Date rédigée 1977-10-26
		Checked by – Vérifié par Planning Sub-Committee	

# SECTOR ACTIVITY DESCRIPTION DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

51

Sector title – <i>Nom du secteur</i> Recreational, Outdoor Power and Specialized Equipment	Sector No. – <i>Nº du secteur</i> 2.34
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Activity title – <i>Nom de l'activité</i> Develop initial company awareness & define policy strategy & assumptions	Activity No. – <i>Activité Nº</i> 1301	Duration (months) <i>Durée (mois)</i> 4
Activity objective (Purposes and results expected) <i>Objectif de l'activité (Intentions et résultats voulus)</i>		

To inform personnel and assure acceptance of metric conversion plans.


Organization(s) responsible for execution <i>Organisme(s) chargé(s) de l'exécution</i>  Individual companies	Responsibility No. <i>Nº de responsabilité</i>  023430	Action by – <i>Exécutant</i>  M.C.O. Individual companies
Outline of work (List in point form) <i>Esquisse du travail (Énumération point par point)</i>		

1. Formulate company policy regarding metric conversion and its main aspects (training).
2. Develop a general awareness program (e.g., through company newsletters, bulletin boards, workshops).

Progress measurement criteria <i>Critères des mesures du progrès</i>	
Criteria:	1) 35%      2) 65%
Aggregate:	35%      100%

Nature of interdependency of this activity with other activities within sector <i>Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur</i>	
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Nature of interdependency of this activity with related sector(s) <i>Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)</i>	Intersectorial event no. <i>Nº des événements intersectoriels</i>
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Revision – <i>Révision</i>	Date prepared – <i>Date rédigée</i> 1978-11-11	Checked by – <i>Vérifié par</i>
No. 	Date	

SECTOR ACTIVITY DESCRIPTION  
DESCRIPTION DE L'ACTIVITÉ SECTORIELLE

Sector title – Nom du secteur		Sector No. – N <sup>o</sup> du secteur	
MEAT PACKERS		62.03	
Activity title – Nom de l'activité		Activity No. – Activité N <sup>o</sup>	Duration (months) Durée (mois)
Identify Conversion Policies and Strategies		1401	24
Activity objective (Purposes and results expected)		Objectif de l'activité (Intentions et résultats voulus)	

Define policy and strategy guidelines for metric conversion.


Organization(s) responsible for execution Organisme(s) chargé(s) de l'exécution	Responsibility No. N <sup>o</sup> de responsabilité	Action by – Exécutant
(a) Sector Sub-Committee (Planning & Monitoring)	62 03 14	Planning & Monitoring Sub-committee
(b) Individual companies		
Outline of work (List in point form)	Esquisse du travail (Énumération point par point)	

1. To establish a metric committee with responsibility for planning and coordinating the metric function for Sector 62.03
2. To establish inter-sectoral contacts and relationships necessary for metric planning and implementation
3. To develop sector policy, strategy and assumptions relative to industry, association and government implications
4. To prepare for the use of individual companies policy and strategy announcements of the metric decision.

Progress measurement criteria	Aggregate	Critères des mesures du progrès
1. 30%	30%	- Planning and monitoring sub-committee to submit reports for sector review and approval
2. 25%	55%	
3. 35%	90%	
4. 10%	100%	

Nature of interdependency of this activity with other activities within sector	Nature des interdépendances entre cette activité et d'autres activités à l'intérieur du secteur
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Nature of interdependency of this activity with related sector(s)	Nature de l'interdépendance entre cette activité et le(s) secteur(s) connexe(s)	Intersectorial event no. N <sup>o</sup> des événements intersectoriels

Revision – Révision		Date prepared – Date rédigée	Checked by – Vérifié par
No.  N <sup>o</sup>	Date		
2	1978-12-12	1977-10-26	Planning Sub-committee





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11. REGULATORY BODIES

12. TRANSPORT

13. LEGISLATION & REGULATION

14. INFRASTRUCTURE RELATIONS

15. DESIGN & CONSTRUCTION

16. PRODUCTION PROCESSES

17. SUPPORT

18. MATERIALS & SUPPLIES

19. BUSINESS SYSTEMS MANAGEMENT SYSTEMS

20. TRAINING

21. PUBLIC MANAGEMENT

22. SYSTEMS MANAGEMENT

23. SYSTEMS MANAGEMENT

24. SYSTEMS MANAGEMENT

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33. SYSTEMS MANAGEMENT

NETWORK DIAGRAM LEGEND

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